

In the Specification:

Please amend the paragraph beginning on page 10, line 12 as follows:

The present invention performs scrambling of the conventional OFDM symbols with a long scrambling sequence after the IFFT operation and prior to the GI insert in a transmitter. The scrambling in the time domain for reuse-one OFDM downlink systems is used to suppress the ~~intecell~~ intercell interference and improve the frequency diversity. The present invention makes OFDM systems with the same spectrum efficiency and peak data rate as in WCDMA system. Accordingly, the conventional OFDM symbols after inverse fast Fourier transform (IFFT) operation at the transmitter side are scrambled in time domain for the purpose of cell search, whitening the intercell interference in reuse-one OFDM systems and frequency diversity. Then the guard interval (GI) is inserted, up-converted at the carrier frequency, and transmitted.

Please amend the paragraph beginning on page 11, line 10 as follows:

Similar to the conventional OFDM receiver, the received signal 150 received by the OFDM receiver 50, according to the present invention, is processed by block 52 for GI removal. The output 152 is converted by a serial-to-parallel block 54. The time-domain received signal 154 is transformed ~~into frequency-domain (TD)~~ by FFT operation, as in Eq.6, by the N-Point FFT 56 into frequency-domain (FD) signal 156. The FD signal  $Y(k)$  is equalized by block 58 as in Eq. 7. The equalized signal 158 is transformed into time domain by IFFT operation 60 as in Eq.1 into equalized TD signal 160, or  $\tilde{b}(n)$ . The time-domain equalized signal ~~146~~ 160 is descrambled by the corresponding scrambling code at block 62 such as

Please amend the paragraph beginning on page 11, line 22 as follows:

Finally the descrambled TD signal 162 is transformed at block 64 back into frequency domain by FFT operation as in Eq.6. The descrambled FD signal 164 is ~~demodulated,~~ demodulated and rate-matched at block 66. The output 166 of the demodulation block 66, or the estimate coded bits are then decoded by the channel decoder 66 into estimate information bits 168.

Please amend the paragraph beginning on page 12, line 23 as follows:

In sum, the time-domain scrambling, according to the present invention, is carried out ~~behind~~ after IFFT operation and prior to GI insert at the transmitter side. After the conventional frequency-domain channel equalization at the receiver side, the equalized signal is transformed into time-domain for descrambling and transformed back into frequency domain. The descrambled FD ~~signal~~ signal is then, demodulated, rate-matched and decoded. Using the long scrambling in time domain could improve the estimates of channel tap delay for frame synchronization, the reuse-one OFDM cellular overall system throughput by whitening the strong intercell interference, and fast cell search, and so forth.

Please amend the paragraph beginning on page 13, line 1 as follows:

The method of signal processing signals in an OFDM transceiver is further illustrated in Figure 4 and Figure 5. As shown in the flowchart 200, after information bits in the receiver are provided at step 210 by a data source, they are encoded at step 220 into coded information bits. The coded information bits are rate-matched and modulated at step 230 and then transformed into time-domain OFDM symbols at step 240. A time domain scrambling step 250 is carried out to provide scrambled OFDM symbols, which are GI inserted at step 260 and further up-converted at the carrier frequency for transmission.